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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

MALINOWSKI, W

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 08/02/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/936,510

Applicant(s)

KIM, YONG BEOM

Examiner

Walter Malinowski

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2000.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 4, and 6-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, and 6-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the convex portions must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, and 6-39 rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al. (U.S. Patent #5,757,455) in view of Toko (U.S. Patent #5,793,459), Izumi (U.S. Patent #5,754,267), Lu et al. (U.S. Patent #5,870,164), Shirai (U.S. Patent #4,405,208), and Kanbe et al. (U.S. Patent #5,500,750).

Sugiyama et al. disclose a liquid crystal display in figure 10, comprising a first and second substrates; a liquid crystal layer between the first and second substrates (column 1, lines 66-67; column 2, lines 1-2); at least one uniaxial optical compensation film (48 or 49) which can be either negative type or positive type formed over the substrate (column 9 lines 51-59); a first alignment film with a plurality of first alignment direction, where at least two of the plurality of first alignment directions are either perpendicular or parallel to one another (figure 6G), formed on the first substrates and a

second alignment film with a alignment direction perpendicular to the first alignment direction formed on the second substrate (column 2, lines 5-13). Sugiyama et al. also disclose a method of manufacturing such device including a method of forming the alignment layer including rubbing or exposing number of times in accordance with the number of the alignment directions to polarized ultraviolet rays to form the alignment directions (column 4, lines 28-49, column 5, lines 26-28).

Sugiyama et al. disclose all the limitations of above claims except for the liquid crystal display device being a reflective type with a reflective electrode formed over the first substrate and exposing the alignment layer to non polarized ultraviolet light to form the alignment directions and the reflective electrode has an opaque metal and a surface with convex portions.

Toko (U.S. Patent #5,793,459) disclose a method of manufacturing a liquid crystal display device including rubbing or exposing to polarized light or non polarized light to form the alignment direction (column 4, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to expose the alignment layer to polarized or non-polarized light to form the alignment direction of the alignment layer of the display device disclosed by Sugiyama et al. since both exposing to the polarized and non polarized light cause the same effect, forming the alignment direction as described by Toko.

Also, it is well known to one of ordinary skill in the art at the time of the invention that a liquid crystal display device can be made either a transmissive type by forming a pixel electrode made of a transparent conductive film such as ITO or a reflective type by forming a pixel electrode made of a reflective conducting film such as Al. See Izumi (U.S. Patent #5,754,267), Lu et al. (U.S. Patent #5,870,164), Shirai (U.S. Patent #4,405,208). Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention to convert the display device disclosed by Sugiyama et al. to the reflective type display device by replace a pixel electrode (12b) formed on the first substrate with a reflective electrode.

Kanbe et al. disclose the reflective electrode has an opaque (i.e., non light transmissive) metal and a surface with convex portions (column 9, lines 20-65) to improve the reflective characteristic (column 2, line 41) and improve the display quality (column 3, line 23).

Therefore, it would have been obvious to use a reflective electrode having an opaque metal and a surface with convex portions, as taught by Kanbe et al., in the device of the combination of Sugiyama et al. and Toko.

Response to Arguments

Applicant's arguments filed June 7, 2000 have been fully considered but they are not persuasive.

Sugiyama is a suitable base reference.

Alignment layers formed by exposure to light are well known. Compensation layers are well known. Reflective electrodes with convex portions are well known.

Kanbe et al. disclose a reflective electrode having an opaque metal and being a surface with convex portions. Kanbe et al. do this to improve the display quality and improve the reflective characteristic.

The combination of Sugiyama et al., Toko, Izumi, Lu et al., Shirai, and Kanbe et al. makes obvious the pending Claims.

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter Malinowski whose telephone number is (703) 308-3172. The examiner can normally be reached on M-F 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7721 for regular communications and (703) 308-7721 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

wjm
August 1, 2000

Walter Malinowski
Walter J. Malinowski
Primary Examiner
Technology Center 2800